

**RECEIVED
CENTRAL FAX CENTER****JUN 04 2008**

U.S. Patent Application No. 10/762,786
Amendment dated June 4, 2008
Response to Office Action dated January 4, 2008

Amendments to the Claims

This listing of claims will replace all prior versions, and listings, of claims in the application:

1.-15. (Canceled)

16. (Previously Presented) The microfluidic device of claim 91, wherein the sample-containment region contains a dried sample.

17. (Previously Presented) The microfluidic device of claim 91, wherein the sample-containment region further comprises at least one of a nucleic acid sequence probe or nucleic acid sequence primer disposed therein.

18. (Original) The microfluidic device of claim 17, wherein the at least one nucleic acid sequence probe or nucleic acid sequence primer is in a dried form.

19. (Previously Presented) The microfluidic device of claim 91, wherein the at least one sample-containment region comprises a plurality of sample-containment regions arranged in an array.

20-87. (Canceled).

U.S. Patent Application No. 10/762,786
Amendment dated June 4, 2008
Response to Office Action dated January 4, 2008

88. (Previously Presented) The microfluidic device of claim 94, wherein the gas-impermeable first cover layer comprises an aluminum film layer.

89. (Previously Presented) The microfluidic device of claim 94, wherein the gas-impermeable first cover layer comprises a polyolefin film.

90. (Previously Presented) The microfluidic device of claim 94, wherein the gas-impermeable first cover layer comprises a polytetrafluoroethylene layer.

91. (Currently Amended) A microfluidic device for processing nucleic acids, the device comprising:

a sample distribution network formed in a substrate, said substrate suitable for PCR processing of a nucleic acid sample, wherein the sample distribution network comprises at least one sample-containment region in fluid communication with a sample inlet region and a sample outlet region;

a first cover layer sealing the sample distribution network, wherein the first cover layer is formed from a ~~PCR-compatible~~ gas-impermeable material; ~~and~~

a venting region formed in fluid communication with the sample outlet region, said venting region having a second cover layer formed from a non-porous, gas-permeable material; wherein the venting region is positioned to avoid interaction between a sample disposed in a the at least one sample-containment region and the non-porous, gas permeable second cover layer; ~~and~~

U.S. Patent Application No. 10/762,786
Amendment dated June 4, 2008
Response to Office Action dated January 4, 2008

a third cover layer formed from a gas-impermeable material, applied to the second cover layer, to prevent evaporation from the at least one sample-containment region.

92. (Previously Presented) The microfluidic device of claim 91, wherein the substrate is selected from a glass or polymer material that can withstand thermal cycling between 60 °C and 95 °C.

93. (Previously Presented) The microfluidic device of claim 91, wherein the non-porous, gas-permeable material is a polysiloxane material.

94. (Canceled).

95. (New) The microfluidic device of claim 91, wherein the third cover layer formed from the gas-impermeable material comprises a non-porous aluminum film layer.

96. (New) The microfluidic device of claim 91, wherein the third cover layer formed from the gas-impermeable material comprises a polyolefin film layer.

97. (New) The microfluidic device of claim 91, wherein the third cover layer formed from the gas-impermeable material comprises a polytetrafluoroethylene layer.

98. (New) The microfluidic device of claim 91, wherein the first cover layer comprises an

U.S. Patent Application No. 10/762,786
Amendment dated June 4, 2008
Response to Office Action dated January 4, 2008

elastomeric material adapted for use with PCR.